AMENDMENT TO THE CLAIMS

Please amend the claims as indicated below.

1 - 28. (Canceled)

29. (Currently amended) A system for performing time-domain equalization, the system comprising:

a beamsplitter configured to split a first optical signal comprising a light pulse into a plurality of beams;

a delay component optically coupled to the beamsplitter, the delay component configured to generate a delayed first beam by providing a first delay to a first beam in the plurality of beams and generate a delayed second beam by providing a second delay to a second beam in the plurality of beams;

a birefringent component configured to receive the delayed first beam and the delayed second beam from the delay component and operable to optically scale the delayed first and second beams by providing a first rotation of a polarization plane of the first beam and a second rotation of a polarization plane of the second beam;

a walk-off crystal configured to split each of the optically scaled first and second beams into a first and a second pair of beams; ~~and~~

an array of photodetectors comprising a first and a second pair of photodetectors configured to receive the first and the second pair of beams respectively and generate therefrom a first and a second electrical component of an electrical signal that corresponds to the input optical signal after time-domain equalization; and

a control system configured to control the birefringent component for optically scaling the delayed first and second beams, wherein the control system generates coefficients used to perform time-domain equalization for approximating an ideal pulse shape.

30 - 31. (Canceled)

32. (Currently amended) The system of claim ~~31~~ 29, wherein the control system further uses an algorithm to minimize a mean square error between the light pulse and an idealized light pulse.

33. (Previously presented) The system of claim 29, wherein the birefringent component comprises an array of liquid crystal cells.

34. (Previously presented) The system of claim 29, wherein the first rotation determines the intensity of the optically scaled first beam and the second rotation determines the intensity of the optically scaled second beam.

35. (Canceled)

36. (Previously presented) The system of claim 29, further comprising:

a polarization splitter configured to receive an input optical signal and split the input optical signal into the first optical signal and a second optical signal.

37. (Previously presented) The system of claim 36, wherein the first optical signal has a first plane of polarization and the second optical signal has a second plane of polarization, the first plane of polarization being different than the second plane of polarization.

38. (Currently amended) A method for performing time-domain equalization, the method comprising:

splitting a first optical signal comprising a light pulse into a plurality of beams;

optically delaying a first beam and a second beam in the plurality of beams;

optically scaling the delayed first and second beams by providing a first rotation of a polarization plane of the delayed first beam and a second rotation of a polarization plane of the delayed second beam;

transmitting the optically scaled first and second beams through a walk-off crystal to produce a first and a second pair of beams respectively; ~~and~~

using an array of photodetectors to generate from the first and second pair of beams a first and a second electrical component respectively of an electrical signal that corresponds to the input optical signal after time-domain equalization<u>; and</u>

<u>using an algorithm containing coefficients to minimize a mean square error between the light pulse and an idealized light pulse</u>.

39- 42. (Canceled)

43. (Previously presented) The method of claim 38, wherein providing the first and second rotation comprises:

providing an array of birefringent liquid crystal cells;

transmitting the delayed first and second beams through the array of birefringent liquid crystal cells; and

controlling the array of birefringent liquid crystal cells to provide the first and second rotation.

44. (Previously presented) The method of claim 38, wherein providing the first and second rotation comprises:

predetermining the first and second rotation.

45. (Previously presented) The method of claim 38, wherein rotating the polarization plane of the delayed first beam comprises:

providing a control system adapted to analyze the first optical signal and to determine coefficients used for rotating the polarization plane of the delayed first beam.

46 - 47. (Canceled)

48. (Currently amended) A system for performing time-domain equalization, the system comprising:

a beamsplitter configured to split a first optical signal comprising a light pulse into a plurality of beams;

a delay component optically coupled to the beamsplitter, the delay component configured to generate a delayed first beam by providing a first delay to a first beam in the plurality of beams; ~~and~~ generate a delayed second beam by providing a second delay to a second beam in the plurality of beams; and generate a delayed third beam by providing a third delay to a third beam in the plurality of beams;

a birefringent component configured to receive the delayed first beam, ~~and~~ the delayed second beam, and the delayed third beam from the delay component and operable to

use a first scaling coefficient to set the delayed first beam to a first intensity; ~~and~~ to use a second scaling coefficient to set the delayed second beam to a second intensity; and to use a third scaling coefficient to set the delayed third beam to a third intensity;

a walk-off crystal configured to receive the delayed first beam of the first intensity and split the delayed first beam into a first pair of beams; ~~, the walk-off crystal further configured~~ to receive the delayed second beam of the second intensity and split the delayed second beam into a second pair of beams; and to receive the delayed third beam of the third intensity and split the delayed third beam into a third pair of beams; and

an array of photodetectors comprising a first, ~~and~~ a second, and a third pair of photodetectors configured to receive the first, ~~and~~ the second, and the third pair of beams respectively and generate therefrom a first, ~~and~~ a second, and a third electrical component of an electrical signal that corresponds to the input optical signal after time-domain equalization.

49. (Previously presented) The system of claim 48, wherein setting the delayed first beam to the first intensity comprises a first rotation of a polarization plane of the delayed first beam and setting the delayed second beam to the second intensity comprises a second rotation of a polarization plane of the delayed second beam, the first rotation different than the second rotation.

50. (Previously presented) The system of claim 48, wherein the first and second scaling coefficients are individually equal to one of a) +1, b) -1, and c) 0.

51. (Previously presented) The system of claim 48, wherein the birefringent component is an array of liquid crystal cells and the first and second intensities are set by controlling the array of liquid crystal cells.

52. (Canceled)

53. (Currently amended) The system of claim ~~52~~ 48, further comprising:

a control system configured to analyze the first optical signal and determine therefrom the first, second, and third scaling coefficients.

54. (Previously presented) The system of claim 48, further comprising:

a control system configured to analyze the first optical signal and determine therefrom the first and second scaling coefficients.

55. (Previously presented) The system of claim 54, wherein the control system is configured to use an adaptive equalization algorithm to determine the first and second scaling coefficients.